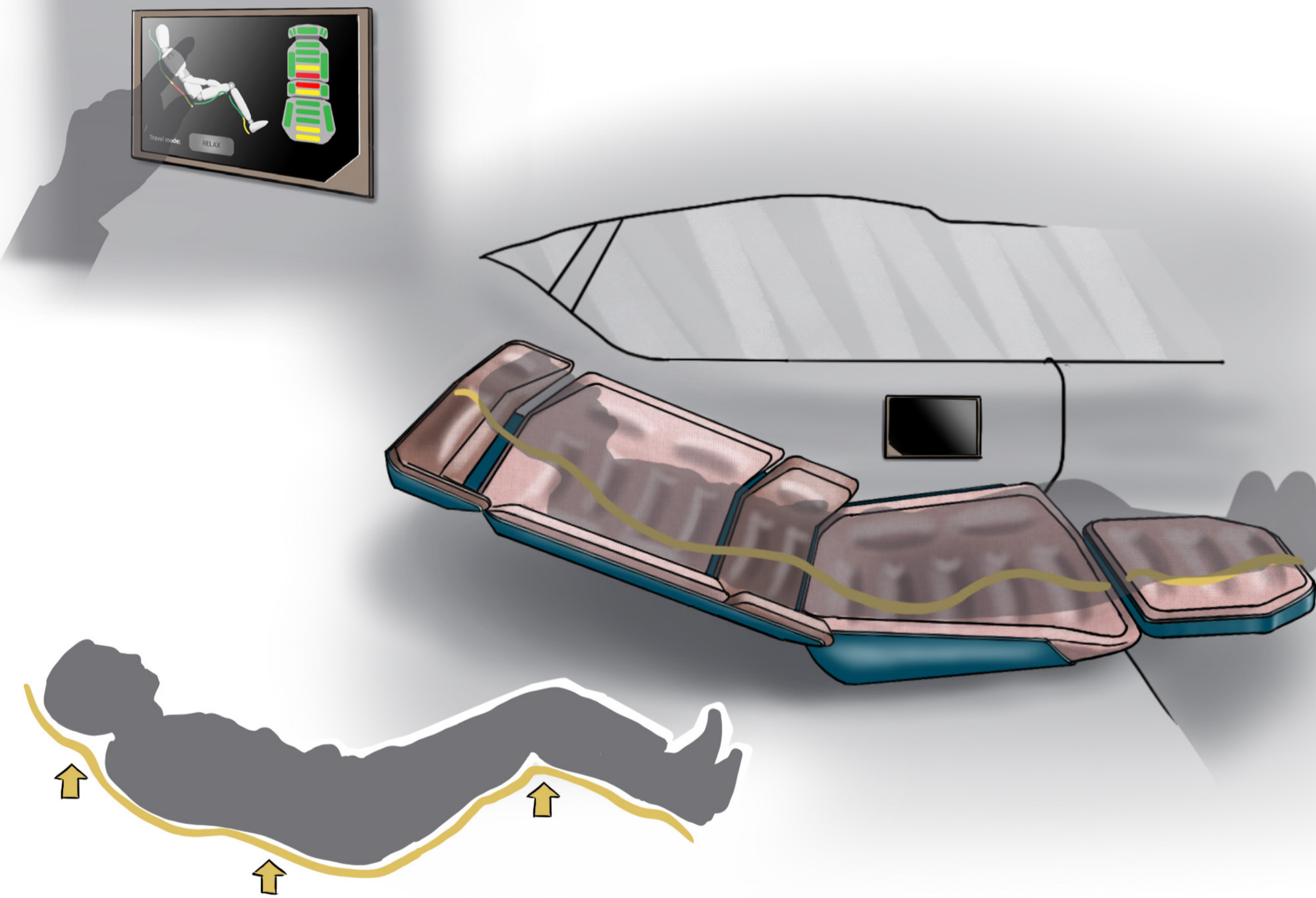
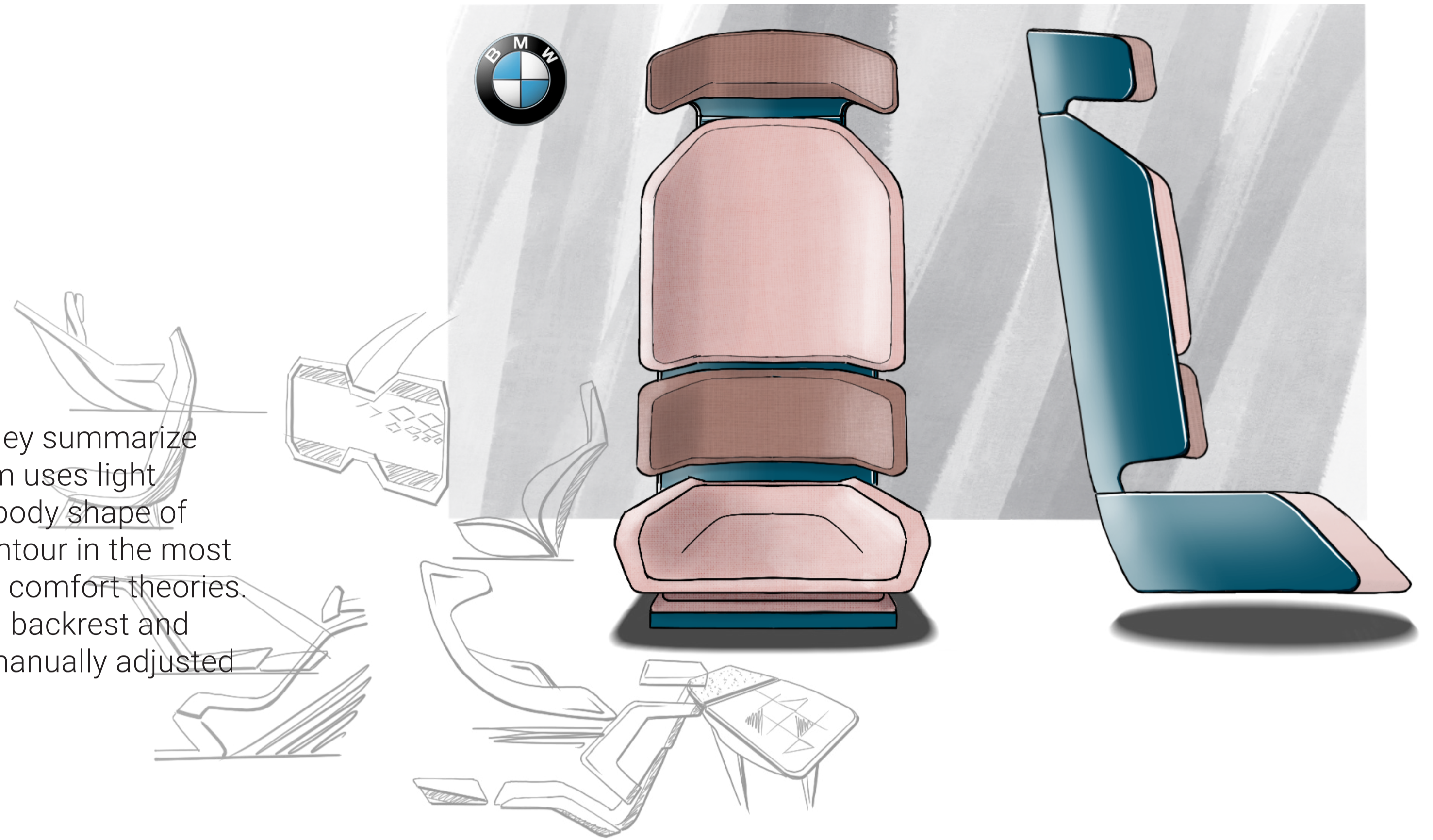


LightFit

A soft robotic seat for autonomous vehicles

LightFit concept is the outcome of a project that strove to explore how soft robotics technology could be applied to seat design in order to improve comfort in car seats of the future. LightFit is an highly adaptable automated seat designed for the ultimate comfort and relax experience on autonomous vehicles. The name LightFit originates by merging the

words "Light" and "Fit": together they summarize its features. Its soft robotic system uses light sensing technology to detect the body shape of the passenger and adapt to its contour in the most optimal way, as dictated by recent comfort theories. The seat is provided with reclining backrest and extractable legrest and it can be manually adjusted via a touchscreen control.

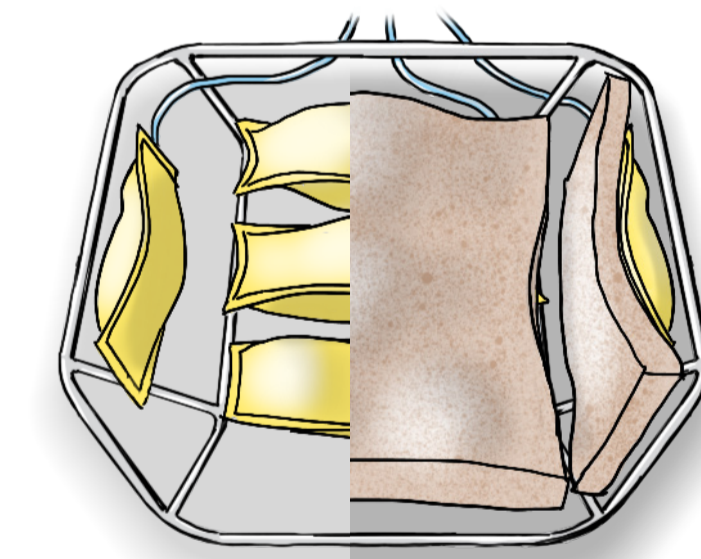


How it works

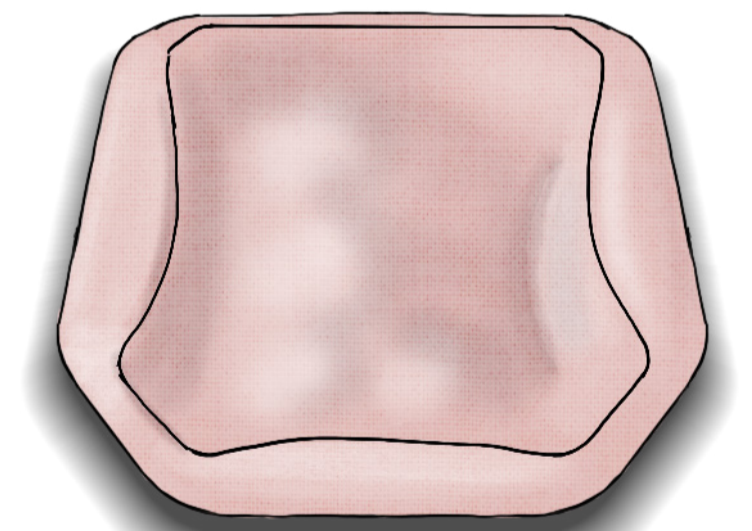
When the passenger opens the doors of the autonomous vehicle, the seat is flat to ease access. The passenger sits down and he/she selects the travel mode: work, relax and social. When "relax" is selected, the seat reclines automatically. Then, the soft robotic system is activated and in 30s it is able to adapt to the passenger's body contour. Every 30 minutes, the soft robotic system applies micro-movements that cannot be perceived by the passenger, but that can improve the level of comfort over prolonged sitting. However, the passenger can decide to adjust the seat at his/her own preference at any moment. He/she can also decide to take a nap by laying down completely. The seat automatically notifies when the vehicle has arrived to destination and it assumes its original shape.

A "soft" interior

The soft robotic system integrated in the seat structure consists of pneumatic actuators made of fabric coated textile. A light sensing system embedded inside them detects the amount and location of the pressure due to the passenger's weight via a machine learning algorithm. A control system regulates the amount of air to be pumped in each inflatable, ensuring the optimal posture.



SEAT PAN:
INTERNAL STRUCTURE



SEAT PAN:
PNEUMATIC SYSTEM
ACTIVATED

Alice Buso
Improving comfort of autonomous vehicles seats
with soft robotic technology
29.03.2019
MSc Integrated Product Design

Committee Peter Vink
Rob Scharff
Maximilian Wegner (company mentor)
Company BMW AG